



Engineering Newsletter

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS

14 GREGORY HALL

SEPTEMBER, 1957

URBANA, ILLINOIS

TV TECHNICAL TIPS (July)

—By CECIL S. BIDLACK, *NAEB TV Engineer*

News of the month centers around publications of the Engineering Service. A two-page mailing of additions to the NAEB Test Equipment Inventory was sent to all chief engineers on our mailing list on June 12. The June *Engineering Newsletter* is at the printers and should be in the mail by the end of the week.

Included with the *ENL* is a four-page list of additions and corrections to the *NAEB Technical Directory*. This brings the February 1 directory up to date as of June 1. We urge you to help us keep this directory up to date by keeping us informed of changes on your technical staff. Many times, the only notice we have of a person's departure is the return of mailing by the post office. When this happens, we delete the name from our mailing list.

The June *ENL* also features an article by James R. Leonard, chief engineer of WCET in Cincinnati, Ohio. He gives constructional details of an electronic sync device for double system kinescope recordings which is incorporated in their Stancil-Hoffman S/5 Magnetic Film recorder.

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A second issue of a *Staging, Lighting and Graphic Arts Newsletter* was also mailed this month. This we published with Dick Lawson of the WILL-TV staff. The June 10 issue contains an article by Bob Peary of the TV staff of the University of Alabama on the "Selection of Title Printing Equipment for TV." It also has a revised edition of an article by George Murphy of the TV Studios of the Alabama Polytechnic Institute on "Slide Making for Television."

We know that our mailing list of staging, lighting and graphic arts personnel is far from complete. Additional copies of this newsletter are available which we'll be glad to send to those interested. If you wish your name on the mailing list, we'll be glad to include it.

NAEB Engineering Newsletter

September 1957

NAEB Engineering Newsletter, a quarterly publication issued by the National Association of Educational Broadcasters, 14 Gregory Hall, Urbana, Ill., \$2 a year, edited by Cecil S. Bidlack.

During the past month we've received copies of the thirty-one technical papers presented at the 1957 NARTB Broadcast Engineering Conference in April. If any of our readers are interested in the list, we'll be glad to send them a copy. Most of these papers are available from the authors upon request.

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The new Spectra C-3 Brightness Spot Meter, just announced, should prove to be a very useful tool for TV studios, especially for those making a serious attempt to control brightness ratios. This instrument is entirely self-contained, being battery operated. A maximum battery life of over 400 hours operating time is claimed due to an automatic switch in the pistol grip which turns the meter on when it is picked up and turns it off when it is put down.

The meter measures an approximate three degree angle of view although an area several times that being measured is seen through the eyepiece surrounding the black dot which indicates the measured area. Spectral response closely matches the C.I.E. luminosity curve. Full scale readings of 50, 500, 5000 or 50,000 footlamberts can be obtained by the use of a range control on the side of the instrument. Its cost is slightly less than \$400.

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RCA tube engineers are working on a new one-inch vidicon tube similar to existing types but which will have much higher sensitivity. The new tube can be operated at higher signal electrode voltages than current types and thus provide an appreciable increase in sensitivity. The new tube can be used for

color or monochrome TV and also in industrial cameras. Samples have been provided to equipment manufacturers.

TV TECHNICAL TIPS (August)

A timely letter from Glen Southworth, staff engineer, at KWSC, Pullman, Washington, arrived to give us a lead item for this column. He writes of three recent TV developments for KWSC. These have proved useful in practice, and he is preparing articles describing them to be submitted to technical publications. He has given advance information with permission to use it in the *Newsletter*.

Perhaps the most interesting of these devices is an electronic pointer or framing device which can be used to locate significant material in slides, film clips or pick-ups. The pointer circuitry generates the white outline of a rectangle of any size and dimensional relationships, which may be located at any place on the raster. In addition, any or all the sides of the rectangle may be removed. If desired, the vertical sides may be "flexed" to attract attention; or a solid rectangle may be derived from the equipment which can be used to key a montage amplifier or for other special effects. (See photo).



A second device has been derived from the electronic pointer circuitry. This two-tube circuit permits reproduction of oscilloscope traces over the TV system without need for any auxiliary equipment other than the signal source. The technique used is essentially limited to a 60 cps sweep rate, and reverses the X and Y scope axes on the TV screen. Mr. Southworth thinks it should prove a very useful device in some applications. For instance, it is possible to convert a normal TV set into an oscilloscope through the use of this technique. By the use of an-

other tube in the circuit, it is possible to display two traces simultaneously. In fact, he believes it is possible to display N traces by adding one tube per trace. It is a very simple matter to super these traces over other program material. (See photo.)



A third device, accomplished by simple circuitry, is a means of reducing normal picture information to outline form for animated supers. This process certainly has some interesting possibilities since it provides a means of reducing normal picture information to a pencil drawing or to a white outline which may be supered over other picture information.

Mr. Southworth will be happy to correspond with anyone in NAEB who is interested in these or other special effects devices of a similar or related nature. If you are interested in more detail, write to him in care of KWSC, State College of Washington, Pullman, Wash.

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We have available a very practical eight-page paper on "Kinescope Recording," written by Mr. Southworth, which we are mailing to chief engineers of ETV stations and production centers. This paper was written from his experience at the Army Signal Corps' television center at Ft. Gordon, Georgia, where his kinescope work covered a year's time and some fifty TV shows. We have extra copies, which we will be glad to send to others upon request.

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In the mailing mentioned above, we are also sending a very fine booklet on "Television Signal Analysis," prepared by the American Telephone and Telegraph Co. To quote from its introduction, "this booklet was written especially for telephone employees concerned with the analysis of television signals transmitted over AT&T facilities. Its principal objective is to promote a common understanding of both signal forms and their nomenclature."

"It first discusses satisfactory monochrome and color television signals as they appear in standard oscilloscope and picture monitor representations. Various types of test signals are also discussed. The major types of video signal impairments are then listed and each type is considered separately. Significant features, as they appear to monitoring observers in both oscilloscope and picture monitor presentations, are illustrated and discussed. Finally, a glossary of video terms is presented."

We will have available only enough copies for chief engineers. Others who wish copies of this highly informative booklet may address their requests to: Mr. F. R. Mac Farland, Division Commercial Manager, American Telephone and Telegraph Co., 250 Park Ave., New York 17, N. Y.

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The April 1957 *Journal* of the Society of Motion Picture and Television Engineers contains three papers on Video Tape Recorder Design. They constitute the first published technical discussions of the Ampex video tape recording system. Various problems encountered in the development are discussed and the steps taken toward solutions are described in detail. Titles of the papers are "Comprehensive Description of the Ampex Video Tape Recorder," by Charles P. Grusberg; "The Modulation System of the Ampex Video Tape Recorder," by Charles E. Anderson; "Rotary Head Switching System in the Ampex Video Tape Recorder," by Ray M. Dolby.

In the same issue of the *SMPTE Journal*, there is an excellent discussion of "Techniques of Television Lighting," by David Thayer of the Television Center, State University of Iowa, Iowa City, Iowa.

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An interesting paper in the July 1957 *SMPTE Journal* describes a system of "Wide Screen Television," by Seymour Rosin and Madison Cawein. In this system, known as "Scanoscope," the conventional 4 x 3 television aspect ratio is changed to an 8 x 3 presentation. A "Scanoscope" lens is used on the camera to squeeze the image on the image orthicon from which it is transmitted over a 9 mc bandwidth system. At the television monitor, the image is unsqueezed electronically.

The July *SMPTE Journal* also contains a listing of U. S. colleges and universities offering courses in motion picture introduction. This report by Desmond P. Wedberg, editor of Film and A-V World magazine also gives a detailed listing of M-P courses. A future article will cover television instruction.

Robert F. Lewis of WFBE at Flint, Mich., sends

along a tip on installing coaxial connectors on RG59/U cable. He states that he has found it unnecessary to solder the shield of the cable when using PL259 plugs and UG176/U reducing adapters. Here is his method:

"After stripping the outer polyethylene jacket from the cable, comb out the shielding, then cut it off so that it extends about 3/8" from the inside of the outer jacket. After folding the combed shielding back over the outer jacket, force the cable into the reducing adapter. Next strip the inner polyethylene jacket from the inner conductor, insert inner conductor in the center pin of PL259 plug, and screw adapter into plug. Solder inner conductor."

Mr. Lewis states that he has used this method for years and has never experienced a mechanical or electrical failure. It facilitates the re-use of coax connectors since it is a simple matter to unsolder and clean the solder only from the center pin of the plug.

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The New Castle, Henry Township School Corporation of New Castle, Indiana, has a 10 watt General Electric FM transmitter for sale. If you are interested in its purchase, contact Mr. Bernard T. Hanley, A-V Director.

ETV STATIONS ON THE AIR

KCTS	Seattle, Wash.	9
KETA-TV	Okl. City, Okla.	13
KETC	St. Louis, Mo.	9
KLSE	Monroe, La.	13
KQED	San Francisco, Calif.	9
KRMA-TV	Denver, Colo.	6
KUHT	Houston, Tex.	8
KUON-TV	Lincoln, Neb.	12
WAIQ	Andalusia, Ala.	2
WBIQ	Birmingham, Ala.	10
WCET	Cincinnati, Ohio	48
WGBH-TV	Boston, Mass.	2
WHA-TV	Madison, Wis.	21
WILL-TV	Urbana, Ill.	12
WKAR-TV	East Lansing, Mich.	60
WKNO-TV	Memphis, Tenn.	10
WOSU-TV	Columbus, Ohio	34
WQED	Pittsburgh, Penna.	13
WTHS-TV	Miami, Fla.	2
WTIQ	Munford, Ala.	7
WTTW	Chicago, Ill.	11
WTVS	Detroit, Mich.	56
WUNC-TV	Chapel Hill, N. C.	4
WYES	New Orleans, La.	8

TV TECHNICAL TIPS (September)

Many television broadcasters have encountered the problem of hum being fed between a mobile TV unit and Telephone Company equipment over a coaxial cable. It can also be a problem when feeding a microwave transmitter over a long coax line on a permanent installation. While going through some recent issues of the *SMPTE Journal*, I ran across a paper which outlines remedial measures when this problem is encountered.

The paper is entitled "Low Frequency Noise Associated With Remote Television Pick Ups" and will be found in the February 1957 *Journal*. It is a joint Broadcaster/Bell System report sponsored by the Video Transmission Advisory Committee which consists of engineers representing three television networks and AT&T engineers. Seven specific measures are listed which may help in eliminating this trouble as well as a discussion of other precautions which may be taken to provide a solution to this vexing problem.

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Our congratulations to Cyril M. Braum of JCET on his appointment as chairman of the AIEE Committee on Television and Aural Broadcasting Systems. "Cy" has supplied us with a list of four papers on the Hagerstown, Maryland, closed circuit educational TV project which were presented at the 1957 Summer General Meeting of the Institute of Electrical Engineers. All of these papers are available in published

form. The following three numbered papers can be obtained from the American Institute of Electrical Engineers, 33 West 39th Street, New York 18, N.Y., at a cost of 40 cents to members of the AIEE and 80 cents each to non-members:

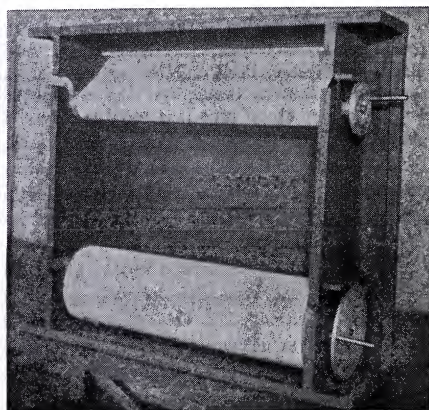
57-667 "Pioneering in Televised Education" by J. R. Brugger, Board of Education, Hagerstown, Md.; 57-668 "Closed Circuit Networks for Educational Television" by W. C. Warman, Chesapeake and Potomac Telephone Co. of Maryland, Baltimore, Md.; 57-669 "Television Systems for In-School Teaching" by M. H. Kraus, Jerrold Electronics Corp., Philadelphia, Penn.

The fourth paper, "Establishing and Equipping the Hagerstown Educational Television Project" by L. L. Lewis, Educational Administrator, Radio Corp. of America, Building 15-6, Camden, N. J., may be obtained free of charge from Mr. Lewis upon request to him at the above address.

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While we are on the subject of the Hagerstown experiment, we'll give you the details on a Mechanical Reading and Writing Tablet which has been developed by John R. Miles. The photographs below show some of the constructional details and how the machines are used. The overall dimensions are 89" wide x 28" high x 12" deep. The writing surface using a 30" roll of yellow pastel paper is 22 x 30 which gives a 3 x 4 aspect ratio on camera.

Three of these machines are in use at Hagerstown and I believe the many ways in which they may be employed is self-evident. They have been used as a



Front and Rear View of the Mechanical Reading and Writing Tablet

writing surface for instructional materials written on camera, or the material can be prepared prior to program time and presented as needed. Lesson material can be saved for future presentation or can be edited to alter the course material. The tablet can be used in place of flip cards or cue cards and also as a crawl title machine. The machines are available in a manual model as shown, or with an electric motor drive and remote control. If you are interested in purchasing these machines you may write Mr. Miles at Route #2, Williamsport, Md. The manual machine sells for \$132.80.

TECHNICAL MEETINGS

We'd like to call your attention to four meetings of interest to technical personnel. On Sept. 27-28 at the Willard Hotel in Washington, D. C., the IRE Professional Group on Broadcast Transmission Systems will hold its annual two-day fall meeting. The program will feature papers primarily on television subjects at sessions on Friday and Saturday morning and Saturday afternoon. Friday afternoon, a visit to the Walter Reed Army Medical Center has been scheduled with a demonstration of its closed circuit color television facilities.

On Oct. 4-9 the SMPTE will hold its annual fall convention in Philadelphia, Penna., at the Sheraton Hotel. A wide range of interests will be reflected in the program of papers to be presented. Details of the program are not yet available. However, sessions are being scheduled on international television, military uses of television and video tape recording. Other sessions will deal with high speed photography, motion picture laboratory practices, closed circuit television, large screen television and television operating practices.

A number of interesting papers on color for both motion pictures and television are to be included in the program. During the convention there will be a considerable schedule of Engineering and Administrative Committee meetings.

The Audio Engineering Society is holding a five-day technical session at the New York Trade Show Building, Eighth Ave. at 35th Street in New York City Oct. 8 through 12. A detailed program is not available for this meeting. However, the Program Committee is working to arrange a program of technical sessions covering many topics from amplifiers to turn tables. The Audio Fair is usually held in

conjunction with the AES meeting where a great deal of audio equipment may be seen. Much of it is demonstrated for both professional and home use.

Concurrently with the SMPTE and the AES, the American Institute of Electrical Engineers is holding its 1957 fall General Meeting at Hotel Morrison in Chicago Oct. 7 through 11. Tuesday Oct. 8 has been tentatively set aside for papers on television broadcasting with the afternoon session being devoted to four papers on the work of the Television Allocations Study Organization (TASO). These four papers will serve as an unofficial progress report on TASO. We have extra copies of the program for this meeting, arranged by the AIEE Committee on Television and Aural Broadcasting, in case you want more details on the paper to be presented.

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General Electric has recently announced an electronic device about the size of a cigar box which is expected to double the life of image orthicon camera tubes. The box mounts on the side of the camera and contains an electronic deflection system which "wobbles" the TV image inside the tube and prevents "sticking" or burn in.

This device is to be marketed immediately and will sell for around \$1,200. It was originally developed at WSM-TV at Nashville.

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WILL-FM of the University of Illinois recently rebuilt and replaced its 8 bay antenna at Allerton Park. It is now transmitting on 300 kw ERP.

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Bob Higgy of WOSU-TV reports that Neal Milligan of his staff has developed an automatic gain control system for use with their RCA vidicon film chain. He states that it works perfectly and avoids all gain riding and completely eliminates dark slides coming up on slide changes.

It is a comparatively simple addition to the film chain and since it is patched in between units it requires no change whatsoever in the RCA equipment and can easily be connected or disconnected. The AGC takes a sample from the video output and from this develops a control voltage which controls the gain control stage in the vidicon processing chassis. The actual video circuits are not changed at all and the AGC works quickly and effectively on all kinds of films and slides.

We have asked Bob for the details of this AGC system which we will duplicate and send to our readers.

Scanned from the National Association of Educational Broadcasters Records
at the Wisconsin Historical Society as part of
"Unlocking the Airwaves: Revitalizing an Early Public and Educational Radio Collection."



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